

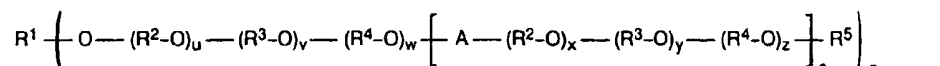
A P P E N D I X I:

THE LISTING OF CLAIMS (version with markings):

1. (currently amended) A hard capsule shell comprising

(A) polymers produced by free-radical polymerization of

- a) at least one vinyl ester of C₁-C₂₄-carboxylic acids in the presence of
- b) polyether-containing compounds of formula I



in which the variables have, independently of one another, the following meaning:

R¹ hydrogen, C₁-C₂₄-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-, poly-alcohol residue;

R⁵ hydrogen, C₁-C₂₄-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;

R² to R⁴ -(CH₂)₂-, -(CH₂)₃-, -(CH₂)₄-, -CH₂-CH(R⁶)-, -CH₂-CHOR⁷-CH₂-;

R⁶ C₁-C₂₄-alkyl;

R⁷ hydrogen, C₁-C₂₄-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;

A -C(=O)-O-, -C(=O)-B-C(=O)-O-, -C(=O)-NH-B-NH-C(=O)-O;

B -(CH₂)₄-, arylene, optionally substituted;

n 1 to 1000;

s 0 to 1000;

t 1 to 12;

u 1 to 5000;

v 0 to 5000;

w 0 to 5000;

x 0 to 5000;

y 0 to 5000;

z 0 to 5000;

and

- c) at least one other copolymerizable monomer c) selected from the group consisting of tert-butyl acrylate, methyl methacrylate, ethyl methacrylate, isobutyl acrylate, tert-butyl methacrylate, styrene, vinyl chloride, acrylic acid, methacrylic acid, acrylamide and methacrylamide,

and subsequent at least partial hydrolysis of the ester functions in the original monomers a),

- (B) optionally, structure-improving auxiliaries and
- (C) optionally other constituents selected from the group consisting of fillers, release agents, flow aids, stabilizers, water-soluble or water-insoluble dyes, flavorings and sweeteners.

2. (canceled)

3. (currently amended) A hard capsule shell as claimed in claim 1, wherein the polymers (A) are obtained by free-radical polymerization of

- a) at least one vinyl ester of C₁-C₂₄-carboxylic acids in the presence of
- b) polyether-containing compounds of the general formula I with a number average molecular weight of from 300 to 100,000, in which the variables have, independently of one another, the following meaning:

R¹ hydrogen, C₁-C₁₂-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-, polyalcohol residue;

R⁵ hydrogen, C₁-C₁₂-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;

R² to R⁴ -(CH₂)₂-, -(CH₂)₃-, -(CH₂)₄-, -CH₂-CH(R⁶)-, -CH₂-CHOR⁷-CH₂-;

R⁶ C₁-C₁₂-alkyl;

R⁷ hydrogen, C₁-C₁₂-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;

n 1 to 8;

s 0;

u 2 to 2000;

v 0 to 2000;

w 0 to 2000;

and

- c) at least one or more other copolymerizable monomers selected from the group consisting of tert-butyl acrylate, methyl methacrylate, ethyl methacrylate, isobutyl acrylate, tert-butyl methacrylate, styrene, vinyl chloride, acrylic acid, methacrylic acid, acrylamide and methacrylamide,

and subsequent at least partial hydrolysis of the ester functions in the original monomers a).

3 4. (currently amended) A hard capsule shell as claimed in claim 1, wherein the polymers (A) are obtained by free-radical polymerization of

- a) at least one vinyl ester of C₁-C₂₄-carboxylic acids in the presence of
- b) polyether-containing compounds of the general formula I with a number average molecular weight of from 500 to 50,000, in which the variables have, independently of one another, the following meaning:

R¹ hydrogen, C₁-C₆-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;

R⁵ hydrogen, C₁-C₆-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;

R² to R⁴ -(CH₂)₂-, -(CH₂)₃-, -(CH₂)₄-, -CH₂-CH(R⁶)-, -CH₂-CHOR⁷-CH₂-;

R⁶ C₁-C₆-alkyl;

R⁷ hydrogen, C₁-C₆-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;

n 1;

s 0;

u 5 to 1000;

v 0 to 1000;

w 0 to 1000;

and

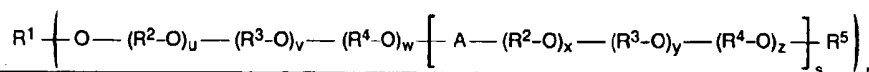
- c) one or more other copolymerizable monomers selected from the group consisting of tert-butyl acrylate, methyl methacrylate, ethyl methacrylate, isobutyl acrylate, tert-butyl methacrylate, styrene, vinyl chloride, acrylic acid, methacrylic acid, acrylamide and methacrylamide,

and subsequent at least partial hydrolysis of the ester functions in the original monomers a).

4 5. (currently amended) A hard capsule shell as claimed in claim 1, wherein the polymers (A) are obtained by free-radical polymerization of

- a) at least one vinyl ester of C₁-C₂₄-carboxylic acids in the presence of

- b) polyether-containing compounds of formula I



in which the variables have, independently of one another, the following meaning:

R¹ hydrogen, C₁-C₂₄-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-, polyalcohol residue;

R⁵ hydrogen, C₁-C₂₄-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;

R² to R⁴ -(CH₂)₂-, -(CH₂)₃-, -(CH₂)₄-, -CH₂-CH(R⁶)-, -CH₂-CHOR⁷-CH₂-;

R⁶ C₁-C₂₄-alkyl;

R⁷ hydrogen, C₁-C₂₄-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;

A -C(=O)-O-, -C(=O)-B-C(=O)-O-, -C(=O)-NH-B-NH-C(=O)-O;

B -(CH₂)_t-, arylene, optionally substituted;

n 1 to 1000;

s 0 to 1000;

t 1 to 12;

u 1 to 5000;

v 0 to 5000;

w 0 to 5000;

x 0 to 5000;

y 0 to 5000;

z 0 to 5000;

and

- c) at least one other copolymerizable monomer selected from the group consisting of tert-butyl acrylate, methyl methacrylate, ethyl methacrylate, isobutyl acrylate, tert-butyl methacrylate, styrene, vinyl chloride, acrylic acid, methacrylic acid, acrylamide and methacrylamide,

and subsequent at least partial hydrolysis of the ester functions in the original monomers a), wherein the polyether-containing compounds b) have been prepared by polymerization of ethylenically unsaturated alkylene oxide-containing monomers, alone or together with, other copolymerizable monomers.

6. (canceled)

7. (canceled)

8. (canceled)

9. (canceled)

- 5 10. (currently amended) A hard capsule shell as claimed in claim 1, wherein the resulting polymers are subsequently crosslinked.
- 6 11. (currently amended) A hard capsule shell as claimed in claim 10, wherein the resulting polymers are subsequently crosslinked by reaction with one or more compounds selected from the group consisting of dialdehydes, diketones, dicarboxylic acids, boric acid, boric acid salts, and salts of multiply charged cations.
- 7 12. (currently amended) A hard capsule shell as claimed in claim 1, wherein the structure-improving auxiliaries (B) employed are selected from the following classes of compounds:
- a) polymers with a molecular weight greater than 50,000
 - b) substances which lead to crosslinking of the polymer chains of the polymers,
 - c) and substances which lead to crosslinking of the polymer chains of the structure-improving auxiliaries.
- 8 13. (currently amended) A hard capsule shell as claimed in claim 1, wherein the structure-improving auxiliaries employed are polymers selected from the group consisting of: polyamino acids, polysaccharides and synthetic polymers.
14. (canceled)
- 9 15. (currently amended) A hard capsule shell as claimed in claim 1, wherein the capsule consists of 10 to 100% polymers of vinyl esters on polyether, 0 to 80% structure-improving auxiliaries and 0 to 30% said other constituents.
- 10 16. (currently amended) A hard capsule shell according to claim 1, obtained by the dip process.
- 11 17. (currently amended) A hard capsule shell as claimed in claim 1 which ~~[has been packed with]~~ encapsulates ingredients selected from the group consisting of one or more active pharmaceutical ingredients, vitamins, carotenoids, minerals, trace elements, food supplements, cosmetic active ingredients, crop protection agents, bath additives, perfume, flavoring, cleaner and detergent.
- 12 18. (currently amended) A hard capsule shell as claimed in claim 1 which capsule comprises from 20 to 80% of a polymer resistant to gastric fluid.

- 13 ¹² 19. (currently amended) A hard capsule shell as claimed in claim ~~18~~, wherein said polymer resistant to gastric fluid is applied as a coating using pharmaceutical coating processes.
- 14 ¹¹ 20. (currently amended) The hard capsule shell as claimed in claim ~~17~~ which [~~contains~~] encapsulates one or more pharmaceutical ingredients.
- 15 ¹¹ 21. (currently amended) The hard capsule shell as claimed in claim ~~17~~ which [~~contains~~] encapsulates one or more ingredients selected from the group consisting of cosmetics, crop protection agents, cleaning agents and food supplements.
22. (canceled)
- 16 ⁸ 23. (currently amended) A hard capsule shell as claimed in claim ~~13~~, wherein said polyamino acids are selected from the group consisting of gelatin, zein, soybean protein and derivatives thereof.
- 17 ⁸ 24. (currently amended) A hard capsule shell as claimed in claim ~~13~~, wherein said polysaccharides are selected from the group consisting of starch, degraded starch, maltodextrins, carboxymethylstarch, cellulose, hydroxypropylmethylcellulose, hydroxypropylcellulose, hydroxyethylcellulose, methylcellulose, carboxymethylcellulose, ethylcellulose, cellulose acetate, cellulose acetate phthalate, hydroxypropylcellulose acetate phthalate, hydroxypropylcellulose acetate succinate, hemicellulose, galactomannans, pectins, alginates, carrageenans, xanthan, gellan, dextran, curdlan, pullulan, gum arabic, chitin, and derivatives thereof.
- 18 ⁸ 25. (currently amended) A hard capsule shell as claimed in claim ~~13~~, where said synthetic polymers are selected from the group consisting of polyacrylic acid, polymethacrylic acid, copolymers of acrylic esters and methacrylic esters, polyvinyl alcohols, polyvinyl acetate, polyethylene glycols, polyoxyethylene/polyoxypropylene block copolymers, polyvinylpyrrolidones and derivatives thereof.

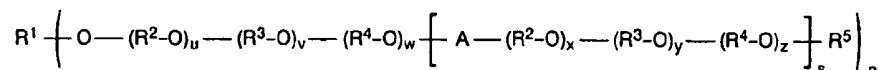
A P P E N D I X II:

THE CURRENT CLAIMS (clean version):

1. (currently amended) A hard capsule shell comprising

(A) polymers produced by free-radical polymerization of

- a) at least one vinyl ester of C₁-C₂₄-carboxylic acids in the presence of
- b) polyether-containing compounds of formula I



in which the variables have, independently of one another, the following meaning:

R¹ hydrogen, C₁-C₂₄-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-, polyalcohol residue;

R⁵ hydrogen, C₁-C₂₄-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;

R² to R⁴ -(CH₂)₂-, -(CH₂)₃-, -(CH₂)₄-, -CH₂-CH(R⁶)-, -CH₂-CHOR⁷-CH₂-;

R⁶ C₁-C₂₄-alkyl;

R⁷ hydrogen, C₁-C₂₄-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;

A -C(=O)-O-, -C(=O)-B-C(=O)-O-, -C(=O)-NH-B-NH-C(=O)-O-;

B -(CH₂)_t-, arylene, optionally substituted;

n 1 to 1000;

s 0 to 1000;

t 1 to 12;

u 1 to 5000;

v 0 to 5000;

w 0 to 5000;

x 0 to 5000;

y 0 to 5000;

z 0 to 5000;

and

- c) at least one other copolymerizable monomer c) selected from the group consisting of tert-butyl acrylate, methyl methacrylate, ethyl methacrylate, isobutyl acrylate, tert-butyl methacrylate, styrene, vinyl chloride, acrylic acid, methacrylic acid, acrylamide and methacrylamide,

and subsequent at least partial hydrolysis of the ester functions in the original monomers a),

- (B) optionally, structure-improving auxiliaries and
- (C) optionally other constituents selected from the group consisting of fillers, release agents, flow aids, stabilizers, water-soluble or water-insoluble dyes, flavorings and sweeteners.

2. (canceled)

3. (currently amended) A hard capsule shell as claimed in claim 1, wherein the polymers (A) are obtained by free-radical polymerization of

- a) at least one vinyl ester of C_1 - C_{24} -carboxylic acids in the presence of
- b) polyether-containing compounds of the general formula I with a number average molecular weight of from 300 to 100,000, in which the variables have, independently of one another, the following meaning:

R^1 hydrogen, C_1 - C_{12} -alkyl, R^6 -C(=O)-, R^6 -NH-C(=O)-, polyalcohol residue;

R^5 hydrogen, C_1 - C_{12} -alkyl, R^6 -C(=O)-, R^6 -NH-C(=O)-;

R^2 to R^4 $-(CH_2)_2-$, $-(CH_2)_3-$, $-(CH_2)_4-$, $-CH_2-CH(R^6)-$, $-CH_2-CHOR^7-CH_2-$;

R^6 C_1 - C_{12} -alkyl;

R^7 hydrogen, C_1 - C_{12} -alkyl, R^6 -C(=O)-, R^6 -NH-C(=O)-;

n 1 to 8;

s 0;

u 2 to 2000;

v 0 to 2000;

w 0 to 2000;

and

- c) at least one or more other copolymerizable monomers selected from the group consisting of tert-butyl acrylate, methyl methacrylate, ethyl methacrylate, isobutyl acrylate, tert-butyl methacrylate, styrene, vinyl chloride, acrylic acid, methacrylic acid, acrylamide and methacrylamide,

and subsequent at least partial hydrolysis of the ester functions in the original monomers a).

4. (currently amended) A hard capsule shell as claimed in claim 1, wherein the polymers (A) are obtained by free-radical polymerization of

- a) at least one vinyl ester of C₁-C₂₄-carboxylic acids in the presence of
- b) polyether-containing compounds of the general formula I with a number average molecular weight of from 500 to 50,000, in which the variables have, independently of one another, the following meaning:

R¹ hydrogen, C₁-C₆-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;

R⁵ hydrogen, C₁-C₆-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;

R² to R⁴ -(CH₂)₂-, -(CH₂)₃-, -(CH₂)₄-, -CH₂-CH(R⁶)-, -CH₂-CHOR⁷-CH₂-;

R⁶ C₁-C₆-alkyl;

R⁷ hydrogen, C₁-C₆-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;

n 1;

s 0;

u 5 to 1000;

v 0 to 1000;

w 0 to 1000;

and

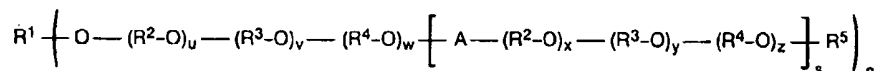
- c) one or more other copolymerizable monomers selected from the group consisting of tert-butyl acrylate, methyl methacrylate, ethyl methacrylate, isobutyl acrylate, tert-butyl methacrylate, styrene, vinyl chloride, acrylic acid, methacrylic acid, acrylamide and methacrylamide,

and subsequent at least partial hydrolysis of the ester functions in the original monomers a).

5. (currently amended) A hard capsule shell as claimed in claim 1, wherein the polymers (A) are obtained by free-radical polymerization of

- a) at least one vinyl ester of C₁-C₂₄-carboxylic acids in the presence of

- b) polyether-containing compounds of formula I



in which the variables have, independently of one another, the following meaning:

- R¹ hydrogen, C₁-C₂₄-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-, polyalcohol residue;
- R⁵ hydrogen, C₁-C₂₄-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;
- R² to R⁴ -(CH₂)₂-, -(CH₂)₃-, -(CH₂)₄-, -CH₂-CH(R⁶)-, -CH₂-CHOR⁷-CH₂-;
- R⁶ C₁-C₂₄-alkyl;
- R⁷ hydrogen, C₁-C₂₄-alkyl, R⁶-C(=O)-, R⁶-NH-C(=O)-;
- A -C(=O)-O-, -C(=O)-B-C(=O)-O-, -C(=O)-NH-B-NH-C(=O)-O-;
- B -(CH₂)_t-, arylene, optionally substituted;
- n 1 to 1000;
- s 0 to 1000;
- t 1 to 12;
- u 1 to 5000;
- v 0 to 5000;
- w 0 to 5000;
- x 0 to 5000;
- y 0 to 5000;
- z 0 to 5000;

and

- c) at least one other copolymerizable monomer selected from the group consisting of tert-butyl acrylate, methyl methacrylate, ethyl methacrylate, isobutyl acrylate, tert-butyl methacrylate, styrene, vinyl chloride, acrylic acid, methacrylic acid, acrylamide and methacrylamide,

and subsequent at least partial hydrolysis of the ester functions in the original monomers a), wherein the polyether-containing compounds b) have been prepared by polymerization of ethylenically unsaturated alkylene oxide-containing monomers, alone or together with, other copolymerizable monomers.

6. (canceled)

7. (canceled)

8. (canceled)

9. (canceled)

10. (currently amended) A hard capsule shell as claimed in claim 1, wherein the resulting polymers are subsequently crosslinked.
11. (currently amended) A hard capsule shell as claimed in claim 10, wherein the resulting polymers are subsequently crosslinked by reaction with one or more compounds selected from the group consisting of dialdehydes, diketones, dicarboxylic acids, boric acid, boric acid salts, and salts of multiply charged cations.
12. (currently amended) A hard capsule shell as claimed in claim 1, wherein the structure-improving auxiliaries (B) employed are selected from the following classes of compounds:
 - a) polymers with a molecular weight greater than 50,000
 - b) substances which lead to crosslinking of the polymer chains of the polymers,
 - c) and substances which lead to crosslinking of the polymer chains of the structure-improving auxiliaries.
13. (currently amended) A hard capsule shell as claimed in claim 1, wherein the structure-improving auxiliaries employed are polymers selected from the group consisting of: polyamino acids, polysaccharides and synthetic polymers.
14. (canceled)
15. (currently amended) A hard capsule shell as claimed in claim 1, wherein the capsule consists of 10 to 100% polymers of vinyl esters on polyether, 0 to 80% structure-improving auxiliaries and 0 to 30% said other constituents.
16. (currently amended) A hard capsule shell according to claim 1, obtained by the dip process.
17. (currently amended) A hard capsule shell as claimed in claim 1 which encapsulates ingredients selected from the group consisting of one or more active pharmaceutical ingredients, vitamins, carotenoids, minerals, trace elements, food supplements, cosmetic active ingredients, crop protection agents, bath additives, perfume, flavoring, cleaner and detergent.
18. (currently amended) A hard capsule shell as claimed in claim 1 which capsule comprises from 20 to 80% of a polymer resistant to gastric fluid.

19. (currently amended) A hard capsule shell as claimed in claim 18, wherein said polymer resistant to gastric fluid is applied as a coating using pharmaceutical coating processes.
20. (currently amended) The hard capsule shell as claimed in claim 17 which encapsulates one or more pharmaceutical ingredients.
21. (currently amended) The hard capsule shell as claimed in claim 17 which encapsulates one or more ingredients selected from the group consisting of cosmetics, crop protection agents, cleaning agents and food supplements.
22. (canceled)
23. (currently amended) A hard capsule shell as claimed in claim 13, wherein said polyamino acids are selected from the group consisting of gelatin, zein, soybean protein and derivatives thereof.
24. (currently amended) A hard capsule shell as claimed in claim 13, wherein said polysaccharides are selected from the group consisting of starch, degraded starch, maltodextrins, carboxymethylstarch, cellulose, hydroxypropylmethylcellulose, hydroxypropylcellulose, hydroxyethylcellulose, methylcellulose, carboxymethylcellulose, ethylcellulose, cellulose acetate, cellulose acetate phthalate, hydroxypropylcellulose acetate phthalate, hydroxypropylcellulose acetate succinate, hemicellulose, galactomannans, pectins, alginates, carrageenans, xanthan, gellan, dextran, curdlan, pullulan, gum arabic, chitin, and derivatives thereof.
25. (currently amended) A hard capsule shell as claimed in claim 13, where said synthetic polymers are selected from the group consisting of polyacrylic acid, polymethacrylic acid, copolymers of acrylic esters and methacrylic esters, polyvinyl alcohols, polyvinyl acetate, polyethylene glycols, polyoxyethylene/polyoxypropylene block copolymers, polyvinylpyrrolidones and derivatives thereof.